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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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22913	7590	06/19/2009	EXAMINER	
Workman Nydegger 1000 Eagle Gate Tower 60 East South Temple Salt Lake City, UT 84111			PATEL, NIRAV G	
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

## Application No.

10/596,374

## Applicant(s)

GAO, QI

## Examiner

Nirav G. Patel

## Art Unit

2624

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 09 June 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-5, 8-18, 24 and 25 is/are rejected.
- 7) ☒ Claim(s) 6, 7, 19-23 and 26 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 June 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/083)
- 4) ☐ Interview Summary (PTO-413)
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_
- Paper No(s)/Mail Date 6/9/2006.

### **DETAILED ACTION**

It would be of great assistance to the Office if all incoming papers pertaining to a filed application carried the following items:

1. Application number (checked for accuracy, including series code and serial no.).
2. Group art unit number (copied from most recent Office communication).
3. Filing date.
4. Name of the examiner who prepared the most recent Office action.
5. Title of invention.
6. Confirmation number (See MPEP § 503).

### ***Priority***

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

### ***Information Disclosure Statement***

1. The information disclosure statement filed 6/9/2009 complies with the provisions of 37 CFR 1.97, 1.98 and MPEP § 609. It has been placed in the application file, and the information referred to therein has been considered as to the merits.

### ***Specification***

2. The abstract of the disclosure is objected to because it exceeds 150 words. Correction is required. See MPEP § 608.01(b).

### ***Claim Objections***

Claims 6, 7, 19, 20, 21, 22, 23, and 26 objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim cannot depend from any other multiple dependent claims. See MPEP § 608.01(n). Accordingly, the claims have not been further treated on the merits.

***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 10 and 16 through 18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
5. The term "sharp angle" in claim 10 is a relative term which renders the claim indefinite. The term "sharp angle" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.
6. The term "approximately parallel" in claim 16 is a relative term which renders the claim indefinite. The term "approximately parallel" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

***Claim Rejections - 35 USC § 102***

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

8. Claims 1 through 4, 8 through 11, 13 through 18, and 24 through 25 are rejected under 35 U.S.C. 102(b) as being anticipated by Dobashi et al. (U.S. Pub. No.: 2001/0031072, "Dobashi").

**1) Regarding Claim 1**, Dobashi teaches a method for person identification by biometric analysis of facial images, comprising the steps of: starting a face recognition apparatus (Paragraph 87: The illumination sources are supposed to be constantly lighted, or a proximity sensor can be used to illuminate an approaching human being, thus starting the apparatus); providing an active lights to illuminate a target face when an user approaches said face recognition apparatus (Figure 1: An illumination section (102 & 103) is used to illuminate a users face, as the user (100) approaches the apparatus); providing an image acquisition unit to capture a plurality of images from a target face illuminated by an active lights (Figure 1, Unit 101 is a camera that captures a plurality of images illuminated by the illumination section);

sending at least one facial image acquired by said image capturing unit to a data processing unit (Figure 1: The acquired image from the camera (101) is sent to an image processing section (104)), and detecting and/or localizing a positions of eyes and/or said face by said data processing unit (Figure 1: Feature value extraction section (106) detects the positions of eyes and nose from the facial region detected); cropping a portion of said facial image and extracting facial feature from said portion of said facial image by said data processing unit (Paragraph 96: Feature value generation section 106c cuts out the facial region at certain size and shape based on the positions of the facial parts detected to generate a feature value);

comparing facial feature with that of previously extracted and stored in a face database (Paragraph 102: The recognition section (107) collates (compares) recognition data stored in the registration information preservation section (database, 108) with the values obtained in the extraction section);

outputting a recognition result obtained from said comparing step (Paragraph 112: The identification results outputs the results of the recognition comparison (Figure 7)).

**2) Regarding Claim 2,** Dobashi teaches in addition to the method of claim 1, wherein said active lights are near infrared lighting sources, or visible light sources, or flash lights, or any combination of them (Paragraph 74: The first illumination section is a lighting apparatus such as a fluorescent lamp (visible light source)).

**3) Regarding Claim 3,** Dobashi teaches in addition to the method of claim 1 or 2, wherein a total energy of an active lighting and environmental lighting on said face area is greater than that of environmental lighting (Paragraph 84: The value of the first illumination source is 1A and the second illumination source is 2A and the outer light (environmental) is C. When  $1A+2A=B>C$  and  $B+C>C$  (both the active light plus the environmental lighting would have to be

greater than the environmental lighting due to the fact that the environmental lighting is added with the active lighting), the influence of the outer light is reduced therefore the total energy of the environmental light is less than the active lighting (Source 1A at say intensity 1 and Source 2A at say intensity 1 (both lowest) added would equal 2 intensity levels, versus C the outside luminosity (1, being consistent throughout all illumination sources), therefore 2 is greater than 1, which is at least twice the outside lighting (environmental))).

**4) Regarding Claim 4,** Dobashi teaches in addition to the method of claim 3, wherein a total energy of active lights and environmental lightings on said facial area is greater or equal to twice an energy of said environmental lightings (Paragraph 84: When the equation  $(1A+2A=B>C)$  the energy of the active lighting is equal to at least twice (Source 1A at say intensity 1 and Source 2A at say intensity 1 (both lowest) added would equal 2 intensity levels, versus C the outside luminosity (1, being consistent throughout all illumination sources), therefore 2 is greater than 1, which is at least twice the outside lighting (environmental)) the energy of the environmental energy without the addition of the environmental lighting. When adding the environmental lighting to the active, at a minimum it would be equal to twice the energy of just the environmental lightings ( $B+C>C+C$  therefore  $B+C>2C$ )).

**5) Regarding Claim 8,** Dobashi teaches a method for facial image acquisition, comprising the steps of:

providing a plurality of active lighting to illuminate a face area (Figure 1: Units 102 & 103 are illumination sources),

providing an image capturing unit for capturing a facial image of a target face (Figure 1, Unit 101 is a camera that captures a plurality of images illuminated by the illumination section), and

sending said facial image to a data processing unit used for localizing and recognizing said target face (Figure 1: The acquired image from the camera (101) is sent to an image processing section (104). Feature value extraction section (106) detects the positions of eyes and nose from the facial region detected);

wherein a total energy of said active lighting and said environmental lighting on said face area is greater than that of environmental lighting (Paragraph 84: The value of the first illumination source is 1A and the second illumination source is 2A and the outer light (environmental) is C. When  $1A+2A=B>C$  and  $B+C>C$  (both the active light plus the environmental lighting would have to be greater than the environmental lighting due to the fact that the environmental lighting is added with the active lighting), the influence of the outer light is reduced therefore the total energy of the environmental light is less than the active lighting (Source 1A at say intensity 1 and Source 2A at say intensity 1 (both lowest) added would equal 2 intensity levels, versus C the outside luminosity (1, being consistent throughout all illumination sources), therefore 2 is greater than 1, which is at least twice the outside lighting (environmental))).

**6) Regarding Claim 9**, Dobashi teaches in addition to the method of claim 8, wherein a total energy of said active lighting and said environmental lighting on said face area is greater or equal to twice an energy of said environmental lighting (Paragraph 84: When the equation  $(1A+2A=B>C)$  the energy of the active lighting is equal to at least twice (Source 1A at say intensity 1 and Source 2A at say intensity 1 (both lowest) added would equal 2 intensity levels, versus C the outside luminosity (1, being consistent throughout all illumination sources), therefore 2 is greater than 1, which is at least twice the outside lighting (environmental)) the energy of the environmental energy without the addition of the environmental lighting. When adding the environmental lighting to the active, at a minimum it would be equal to twice the energy of just the environmental lightings ( $B+C>C+C$  therefore  $B+C>2C$ ).



**7) Regarding Claim 10**, Dobashi teaches in addition to the method of claim 8 or 9, wherein a relative position between said active lighting and said image apparatus is relatively fixed, and a direction of said active lights and an axis of a camera lens of said image apparatus are in a sharp angle (Figure 2: The illumination source (active lighting, 102) is place at an angle of 45 degrees (sharp angle) to the image capturing unit (camera, 101)).

**8) Regarding Claim 11**, Dobashi teaches in addition to the method according to in claim 8, wherein said active lighting are near infrared light sources, or visible light sources, or flash lights, or any combination of them (Paragraph 248: An infrared illumination lamp can be used. Paragraph 74: The first illumination section is a lighting apparatus such as a fluorescent lamp (visible light source)).

**9) Regarding Claim 13**, Dobashi teaches facial image acquisition apparatus used for realizing the method of claim 1, comprising an active light (Figure 1: Units 102 & 103 are illumination sources), an image capturing unit (Figure 1, Unit 101 is a camera that captures a plurality of images illuminated by the illumination section), a power switch (Paragraph 87: A proximity sensor is used to turn on illumination sources, a switch) and a data processing unit (Figure 1: Unit 104 is a image processing unit (data processing));

said active lights used for illuminating a face area (Figure 1: Units 102 & 103 are illumination sources to illuminate a source);

said power switch use for controlling said active lights to illuminate said face area (Paragraph 87: The illumination sources are supposed to be constantly lighted, or a proximity sensor can be used to illuminate an approaching human being, thus acting as a power switch to control the illumination sources);

said image capturing unit used for capturing facial images of said face area, and sending at least one facial image to said data processing unit (Figure 1, Unit 101 is a camera that captures a plurality of images illuminated by the illumination section);

said data processing unit used for receiving images from said image capturing unit, and localizing eyes and face in said facial image, cropping a portion of said facial image, and extracting facial features (Figure 1: The acquired image from the camera (101) is sent to an image processing section (104). Feature value extraction section (106) detects the positions of eyes and nose from the facial region detected. Paragraph 102: The recognition section (107) collates (compares) recognition data stored in the registration information preservation section (database, 108) with the values obtained in the extraction section)), and

comparing facial features with that of previously extracted and stored in a facial image database (Paragraph 102: The recognition section (107) collates (compares) recognition data stored in the registration information preservation section (database, 108) with the values obtained in the extraction section).

**10) Regarding Claim 14**, Dobashi teaches in addition to the apparatus of claim 13, wherein a total energy of said active lights and said environmental lighting on said face area is greater than an energy of said environmental lighting (Paragraph 84: When the equation  $(1A+2A=B>C)$  the energy of the active lighting is equal to at least twice (Source 1A at say intensity 1 and Source 2A at say intensity 1 (both lowest) added would equal 2 intensity levels, versus C the outside luminosity (1, being consistent throughout all illumination sources), therefore 2 is greater than 1, which is at least twice the outside lighting (environmental)) the energy of the environmental energy).

**11) Regarding Claim 15**, Dobashi teaches in addition to the apparatus of claim 14, wherein a position of said active lighting and said image capturing unit is relatively

fixed, and a angle between a direction of said active lighting and a axis of the camera lens of said image apparatus between 0.degree. to 90.degree. (Figure 2: The illumination source (active lighting, 102) is place at an angle of 45 degrees to the image capturing unit (camera, 101)).

**12) Regarding Claim 16,** Dobashi teaches in addition to the apparatus of claim 15, wherein the direction of said active lights is approximately parallel to an axis of a camera lens (With the placement of the active lights, the rays of light are approximately parallel to an axis of the camera).

**13) Regarding Claim 17,** Dobashi teaches in addition to the apparatus of claim 15 or 16, wherein said active lights are near infrared light sources, or visible light sources, or flash lights, or any combination of them (Paragraph 248: An infrared illumination lamp can be used. Paragraph 74: The first illumination section is a lighting apparatus such as a fluorescent lamp (visible light source)).

**14) Regarding Claim 18,** Dobashi teaches in addition to the apparatus of claim 17, wherein wavelength of said active lights are in a range of 740 nm-4000 nm, or a plurality of several wavelengths in said range (Paragraph 248: The infrared illumination lamp can output lights in the range of 800 nm – 1 mm, per the definition of infrared light).

**15) Regarding Claim 24,** Dobashi teaches in addition to the apparatus of claim 13, wherein said data processing unit comprises a PC/computer or an embedded processor in which image processing software is installed (Paragraph 88: The image processing section (data processing) can be realized by a computer (PC)).

**16) Regarding Claim 25,** Dobashi teaches in addition to the apparatus of claim 13, wherein said power switch is a proximity sensor switch or an RFID controlled switch

(Paragraph 87: The infrared sensor detects the approach (proximity of a human being which is a switch to turn on the illumination source).

***Claim Rejections - 35 USC § 103***

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dobashi in view of Takenaka (U.S. Pub. No.: 2004/0081338).

**1) Regarding Claim 5**, while Dobashi teaches the method of claim 2, he fails to teach said method further includes a step of judging whether localizing eyes and/or face is successful; if yes, execute next step, otherwise do localizing step again.

However, in the same field of endeavor, Takenaka teaches said method further includes a step of judging whether localizing eyes and/or face is successful; if yes, execute next step, otherwise do localizing step again (Figure 3: At step S13, if a face is not detected (S13) the process starts over to detect (localize features, face, in the image). If a face is detected the next step is executed).

Determining whether the features of the image are correctly identified and then proceeding or repeating the identification of the image allows for a way to ensure that the features are properly identified to ensure proper identification of an image, therefore yielding a more accurate result.

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to apply the teachings of Takenaka to Dobashi.

11. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dobashi in view of Vertegaal (U.S. Pub. No.: 2005/0175218, "Vertegaal").

**1) Regarding Claim 12**, Dobashi teaches the method of claim 8, he fails to teach wherein said data processing unit can make use of the specularity in each of the eyes to localize the eye position, after a facial image is captured.

However, in the same field of endeavor, Vertegaal teaches wherein said data processing unit can make use of the specularity in each of the eyes to localize the eye position, after a facial image is captured (Claim 1: Eye tracking is achieved by producing glints or reflections in the subject's eyes and then analyzing the image to find the glint and center of the eye and then determining the position of the eye (eye gaze)).

Determining the location of the eyes using specular highlights (reflections) allows for a way of efficiently determining eye location and point of gaze which can improve identification of facial features.

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to apply the teachings of Vertegaal to Dobashi.

### ***Conclusion***

Method claims 1-12 were not rejected under 35 USC 101 due to the fact that the claims requires a particular machine thus passing the machine analysis. The claims

also recite data that represents a physical object, thus passing the transformation analysis.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nirav G. Patel whose telephone number is (571)270-5812. The examiner can normally be reached on Monday - Friday 8 am - 5 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bhavesh Mehta can be reached on 571-272-7453. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Nirav G. Patel/  
Examiner, Art Unit 2624

/Wenpeng Chen/  
Primary Examiner, Art Unit 2624  
6/17/09